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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,935	08/05/2003	Bruce G. Cortez	2002-0173	6587

26652 7590 04/24/2007

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EXAMINER	
YUEN, KAN	
ART UNIT	**PAPER NUMBER**
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/634,935	Applicant(s) CORTEZ ET AL.	
	Examiner Kan Yuen	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *08/05/2003*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Detailed Action

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-22, and 24-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 3-4, the term "ones of said links" is considered as vague and indefinite, because it not clear whether it's claiming one or more than one. Similar problem exist in claim 3, line 8.

In claim 2, line 3, the term "such as" is considered vague and indefinite, because its not known whether the limitation after the term "such as" should be considered or not. Similar problem exist in claims 7, 12, 16, and 24.

In claim 2, line 4, the term "preferentially" is considered vague and indefinite, because its not known whether the limitation after the term "preferentially" should be considered or not. Similar problem exist in claims 8,12, 25.

In claim 11, line 8, the term “adapted to” is considered vague and indefinite, because its not known whether the limitation after the term “adapted to” should be considered or not. Similar problem exist in claims 13, 19, and 20.

In claim 7, line 2, the term ‘k” has not yet been defined. Similar problem exist in claims 16 and 24.

In claim 9, lines 4 and 7, the terms “M”, and “N” have not yet been defined. Similar problem exist in claim 18, and 26.

Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8, 10-17, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doshi et al. (Patent No.: 6215763), in view of Chow et al. (Patent No.: 5495471).

For claim 1, Doshi et al. disclosed the methods of ones of the channels in ones of the links having been previously reserved for other connections between the nodes using a first link selection algorithm (see column 6, lines 16-28). In the reference, distributed pre-computation technique includes plurality of parallelization mechanism to improve the efficiency of an algorithm. One parallelization mechanism is used to locking (reserving) the primary path associated with a given demand. In other words, the parallelization mechanism can be considered as the first algorithm to establish or reserve a connection; the method comprising responding to requests for connections between the first and second nodes by utilizing a second link selection algorithm different from the first link selection algorithm to select a particular link for each requested connection (see column 7, lines 14-35). In the reference, the distributed pre-computation technique can be performed with other parallelization mechanisms can be interpreted as the other algorithm, is used for pre-compute restoration paths in a

distributed manner such that the restoration time is significantly reduced. However, Doshi et al. did not explicitly disclose the method of links for requested connections between the first and second nodes. Chow et al. from the same or similar fields of endeavor teaches the method of method for reserving channels of particular ones of the links for requested connections between the first and second nodes (see column 4, lines 54-67, see column 5, lines 1-20, see column 9 lines, 21-35, and also see fig. 5C). A fig. 5C show each cross-connect is connected with plurality of links and each links has plurality of channels, and the two end cross connects can simultaneously broadcast request messages for restoration. Thus, it would have been obvious to the person of ordinary skilled in the art at the time of the invention to use to the method as taught by Chow et al. in the network of Doshi et al. The motivation for using the method as taught by Chow et al. in the network of Doshi et al. being that it greatly reduces the time in path restoration process.

Regarding to claim 2, Doshi et al. also disclosed the method of the first algorithm is of a type that causes less bandwidth fragmentation than the second algorithm, the second algorithm is of a type that causes less glare than the first algorithm, and the second algorithm is such as to preferentially select as the particular link a link that the first algorithm had previously selected for the other connections (see column 6, lines 29-41, and see column 11, lines 20-30). In the reference, the distributed pre-computation algorithm utilizes at least one parallelization mechanism to provide contention (glare) resolution among one or more contending demands. The other algorithm is to solve

network problems, such as determining the minimum capacity required to achieve complete restoration, which can be interpreted as less bandwidth fragmentation.

Regarding to claim 3, Doshi et al. also disclosed the method of the nodes operate in a communication network in which initially provisioned connections are made between pairs of endpoints (see column 6, lines 16-28). In the reference, distributed pre-computation technique includes plurality of parallelization mechanism to improve the efficiency of an algorithm. One parallelization mechanism is used to locking (reserving) the primary path associated with a given demand. In other words, the parallelization mechanism can be considered as the first algorithm to establish or reserve a connection; restoration connections are made between at least particular pairs of the endpoints upon failure of the initially provisioned connections between those endpoints (see column 6, lines 7-28), the first algorithm is used to initially provision the other connections, and the requested connections are ones of the restoration connections (see column 6, lines 29-41, and see column 11, lines 20-30). As stated in the reference, in the first phase of distributed pre-computation technique, paths are allocated for capacity demands to the extent possible without resolve contentions, in this case, we can call it the first algorithms to initiate connection, and the second phase is to resolve the contending issue, which can be interpreted as the second algorithm.

Regarding to claim 4, Doshi et al. also disclosed the method of one of two versions of the second algorithm is used when the first node receives a connection request and wherein the other of the two versions of the second algorithm is used when the second node receives a connection request (see column 5, lines 61-67, and see

column 6, lines 1-30, and see lines 51-67, and see fig. 6, box central controller 54). As mentioned in the reference, the source or destination nodes can be utilized for performing restoration algorithm, and the algorithm can utilize using at least one parallelization mechanisms in an algorithm to utilize for restoration. The source or destination nodes have the capabilities of receiving information from the central controller. Therefore, we can say that the restoration algorithm can be performed with many versions of parallelization mechanisms.

Regarding to claim 5, Doshi et al. also disclosed the method of the glare is a situation in which the first node and second node substantially concurrently attempt to reserve at least a particular one of the channels for respective different connections (see column 11, lines 50-67, and see column 12, lines 1-5). In the reference, the term contending refers to as conflict between demands for same capacity.

Regarding to claim 6, Doshi et al. also disclosed the method of the first algorithm is a best-fit algorithm (see column 8, lines 56-67), as mentioned in the reference, the restoration technique is to compute the minimum amount of capacity necessary to provide 100% restoration of traffic in the event of single link, so this technique can be interpreted as the best-fit algorithm; and the second algorithm is an interleave algorithm (see column 20, lines 25-47, lines 60-67, and see column 21 lines, 1-15, and also see fig. 12). In the reference, the alternative contention resolution technique is defined with a set of demands, which are sorted in increasing order of collision index. The demand which the minimum collision index is the first demand on the sorted list, which can be interpreted as the interleave algorithm.

Regarding to claims 7, 16 and 24, Doshi et al. also disclosed the method of there are K of the links having indices 1, 2,...,K, and the best-fit algorithm is such as to select as a link for a requested connection the lowest-indexed link from among those of the links that have the smallest amount of unassigned bandwidth that can still accommodate the connection request (see column 7, 1-13, see column 8, lines 56-67, and also see column 30, lines 22-36). As mentioned in the reference, all the channels are indexed, and the link the restoration technique is to compute the minimum amount of capacity necessary to provide 100% restoration of traffic in the event of single link, so this technique can be interpreted as the best-fit algorithm.

Regarding to claim 8, Doshi et al. also disclosed the method of the interleave algorithm is such that each of the nodes preferentially selects the particular link from mutually exclusive sets of the links (see column 20, lines 25-47, lines 60-67, and see column 21 lines, 1-30, and also see fig. 12). As stated in the reference, there are two sets of demands (links), denoted as Set I, and Set II, can be considered as an interleave algorithm.

Regarding to claim 10, Doshi et al. also disclosed the method of each of the nodes is a cross-connect (see column 1, lines 48-60, and see fig. 1).

Regarding to claim 11, Doshi et al. also disclosed the method of the network node being adapted to be connected to a second communications network node by multiple links, each of the links having multiple channels (see column 5, lines 61-67, see column 6, lines 1-15 and also see fig. 1 and fig 2). Fig. 1 shows a particular routing device 10, which includes plurality of links and channels (Fibers 1-4, and plurality of

channels lambda 1 and lambda 2, etc). Fig. 2 shows endpoints 18-1 and 18-2 being connected between an optical network; the network node being further adapted to reserve at least one channel of a particular one of the links for a requested connection between the network node and the second network node using a selected one of two different link selection algorithms (see column 6, lines 16-28). In the reference, distributed pre-computation technique includes plurality of parallelization mechanism to improve the efficiency of an algorithm. One parallelization mechanism is used to locking (reserving) the primary path associated with a given demand, which can be considered as an algorithm; a first one of the algorithms being used when the requested connection is an initially provisioned connection and a second one of the algorithms being used when the requested connection is a restoration connection (see column 6, lines 29-41). As stated in the reference, in the first phase of distributed pre-computation technique, paths are allocated for capacity demands to the extent possible without resolve contentions, in this case, we can call it the first algorithms to initiate connection, and the second phase is to resolve the contending issue, which can be interpreted as the second algorithm for restoration. However, Doshi et al. did not explicitly disclose the method of links for requested connections between the first and second nodes. Chow et al. from the same or similar fields of endeavor teaches the method for links for requested connections between the first and second nodes (see column 4, lines 54-67, see column 5, lines 1-20, see column 9 lines, 21-35, and also see fig. 5C). A fig. 5C show each cross-connect is connected with plurality of links and each links has plurality of channels. Thus, it would have been obvious to the person of ordinary skilled in the art

at the time of the invention to use to the method as taught by Chow et al. in the network of Doshi et al. The motivation for using the method as taught by Chow et al. in the network of Doshi et al. being that it greatly reduces the time in path restoration process.

Regarding to claim 12, Doshi et al. also disclosed the method of the first algorithm is of a type that causes less bandwidth fragmentation than the second algorithm, the second algorithm is of a type that causes less glare than the first algorithm, and the second algorithm is such as to preferentially select, as the particular one of the links, a link that the first algorithm had previously selected for the other connections (see column 6, lines 29-41, and see column 11, lines 20-30). In the reference, the distributed pre-computation algorithm utilizes at least one parallelization mechanism to provide contention (glare) resolution among one or more contending demands. The other algorithm is to solve network problems, such as determining the minimum capacity required to achieve complete restoration, which can be interpreted as less bandwidth fragmentation.

Regarding to claim 13, Doshi et al. also disclosed the method of the network node is adapted to utilize a selected one of two versions of the second algorithm as a function of information received by the network node (see column 5, lines 61-67, and see column 6, lines 1-15, and see lines 51-67, and see fig. 6, box central controller 54). As mentioned in the reference, the source or destination nodes can be utilized for performing restoration algorithm, and the algorithm can be utilized using at least one or more parallelization mechanisms to improve the restoration process. The source or destination nodes have the capabilities of receiving information from the central

controller. Therefore, we can say that the restoration algorithm can be performed with many versions of parallelization mechanisms.

Regarding to claim 14, Doshi et al. also disclosed the method of the glare is a situation in which the network node and second node substantially concurrently attempt to reserve at least a particular one of the channels for respective different connections (see column 11, lines 50-67, and see column 12, lines 1-5). In the reference, the term contending refers to as conflict between demands for same capacity, therefore can be interpreted as glare.

Regarding to claim 15, Doshi et al. also disclosed the method of the first algorithm is a best-fit algorithm (see column 8, lines 56-67), as mentioned in the reference, the restoration technique is to compute the minimum amount of capacity necessary to provide 100% restoration of traffic in the event of single link, so this technique can be interpreted as the best-fit algorithm; and the second algorithm is an interleave algorithm (see column 20, lines 25-47, lines 60-67, and see column 21 lines, 1-15, and also see fig. 12). In the reference, the alternative contention resolution technique is defined with a set of demands (links), which are sorted in increasing order of collision index. The demand which the minimum collision index is the first demand on the sorted list, which can be interpreted as the interleave algorithm.

Regarding to claim 17, Doshi et al. also disclosed the method of

the interleave algorithm is such that the network node selects the particular link from a predetermined one of two mutually exclusive sets of the links (see column 20, lines 25-47, lines 60-67, and see column 21 lines, 1-30, and also see fig. 12). As stated

in the reference, there are two sets of demands (links), denoted as Set I, and Set II, which can be considered as an interleave algorithm.

Regarding to claim 23, Doshi et al. also disclosed the method of provisioning an initial path through the network between endpoints served by the network by provisioning connections between pairs of the cross-connects along the initial path, each of the connections comprising particular channels of particular links interconnecting the pairs of cross-connects, the initial connections being established using a best-fit algorithm to select the links for the connections along the initial path (see column 8, lines 56-67), as mentioned in the reference, the restoration technique is to compute the minimum amount of capacity necessary to provide 100% restoration of traffic in the event of single link, so this technique can be interpreted as the best-fit algorithm;, and responsive to a failure of at least one of the paths, establishing a restoration path through the network between the failed path's endpoints by establishing restoration connections between pairs of the cross-connects along the restoration path, each of the restoration connections comprising particular channels of particular links interconnecting the pairs of cross-connects along the restoration path, the restoration connections being established using an interleave algorithm to select the links for the connections along the restoration path (see column 20, lines 25-47, lines 60-67, and see column 21 lines, 1-15, and also see fig. 12). In the reference, the alternative contention resolution technique is defined with a set of demands, which are sorted in increasing order of collision index. The demand which the minimum collision index is the first demand on the sorted list, which can be interpreted as the interleave algorithm.

However, Doshi et al. did not explicitly disclose the method for use in a communication network of a type comprising a plurality of cross-connects, individual pairs of the cross-connects being interconnected by multiple links, each of the links having multiple channels. Chow et al. from the same of similar field of endeavor teaches the method for use in a communication network of a type comprising a plurality of cross-connects, individual pairs of the cross-connects being interconnected by multiple links, each of the links having multiple channels (see column 4, lines 54-67, see column 5, lines 1-20, see column 9 lines, 21-35, and also see fig. 5C). A fig. 5C show each cross-connect is connected with plurality of links and each links has plurality of channels. Thus, it would have been obvious to the person of ordinary skilled in the art at the time of the invention to use to the method as taught by Chow et al. in the network of Doshi et al. The motivation for using the method as taught by Chow et al. in the network of Doshi et al. being that it greatly reduces the time in path restoration process by having plurality of cross connects comprising many sub-channels.

Regarding to claim 25, Doshi et al. also disclosed the method of the interleave algorithm is such that a first cross-connect of the particular pair of cross-connects responds to each request to establish a restoration connection between itself and the second cross-connect of the particular pair of cross-connects by preferentially selecting a link for that restoration connection from a first set of the links interconnecting that particular pair of cross-connects (see column 3, lines 60-67, and see column 4, lines 1-10), in the reference, the connected nodes need to find out where spare capacity is available, and to create restoration path by reserving available spare capacity on

selected paths; and the second cross-connect responds to each request to establish a restoration connection between itself and the first cross-connect by preferentially selecting a link for that restoration connection from a second set of the links interconnecting that particular pair of cross-connects, the first and second sets of links being mutually exclusive (see column 30, lines 58-67). As stated in the reference, the demand is divided into groups of equal sizes, and the route with the largest minimum value of FC over its entire links 1 is selected from the groups by the connected nodes.

Allowable Subject Matter

4. Claims 9, 18-22, and 26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The prior art failed to teach the methods of the interleave algorithm is such that the first node responds to a connection request by selecting, as the particular link, a) a link from among the links having the indices { 1,3,5 ....M } that has the smallest amount of unassigned bandwidth that can still accommodate the connection request, or, if there is no such link, b) the first link having an index in the sequence {N ....6,4,2} that has enough unassigned bandwidth to accommodate the connection request, the interleave algorithm is such that the second node responds to a connection request by selecting, as the particular link, a) a link from among the links having the indices { 2,4,6 ....N } that has the smallest amount of unassigned bandwidth that can still accommodate the

connection request, or, if there is no such link, b) the first link having an index in the sequence { M ....5,3,1 } that has enough unassigned bandwidth to accommodate the connection request, M is the largest odd number K, and N is the largest even number K, as recited in claims 9, 18, and 26.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ash et al. (Patent No.: 6778535), Grover (Patent No.: 4956835), Saleh (Pub No.: 2003/0031127), and Baniewicz et al. (Patent No.: 6507561), are show systems which considered pertinent to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kan Yuen whose telephone number is 571-270-2413. The examiner can normally be reached on Monday-Friday 10:00a.m-3:00p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky O. Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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